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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/668,853	09/23/2003	Richard A. Pappas	50005-93	3137

7590 05/06/2004  
Woodard, Emhardt, Moriarty, McNett & Henry LLP  
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Indianapolis, IN 46204-5137

EXAMINER
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BELLAMY, TAMIKO D

ART UNIT	PAPER NUMBER
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2856

DATE MAILED: 05/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/668,853	<b>Applicant(s)</b> PAPPAS ET AL.	
	<b>Examiner</b> Tamiko D. Bellamy	<b>Art Unit</b> 2856	<i>AL</i>

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 23 September 2003.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>12/12/03</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Oath/Declaration*

1. It does not identify the mailing address of each inventor. A mailing address is an address at which an inventor customarily receives his or her mail and may be either a home or business address. The mailing address should include the ZIP Code designation. The mailing address may be provided in an application data sheet or a supplemental oath or declaration. See 37 CFR 1.63(c) and 37 CFR 1.76.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-12, 17, 19-24, and 27, 28, and 30-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Collins et al. (6,234,023).

With respect to claims 1, 20, 30, 31, 32, and 34, as depicted in fig. 1, Collins et al. discloses a container (10), an ultrasonic transducer (e.g., ultrasonic source 28) at a location below the upper surface of the contents of the container (10). Collins et al. also discloses receiving a first response (e.g. receiver 30) corresponding to an ultrasound reflected from the opposite sidewall (e.g., wavefront 26). Collins et al. discloses receiving a second response (e.g. receiver 30) corresponding to an ultrasound reflected from the (e.g., wavefront 24) interface (22) between the surface of the contents in the container (10). Finally, Collins et al. discloses using the difference in travel time for the two wave fronts (24,26) to provide a level of the contents in the container. Collins et al.

lacks the detail of an ultrasound reflected from the intersection between the upper surface and a sidewall of the container. However, the ultrasonic source (28) in which Collins et al. can easily be manipulated to transmit a signal that encounters an intersection of the container as well as the surface of the contents. Therefore, to employ Collins et al. on an ultrasound reflected from the intersection between the upper surface and a sidewall of the container would have been obvious to one of ordinary skill in the art at the time of the invention since this reference explicitly teaches its use on ultrasonic monitoring device for containers which includes reflecting ultrasound waves from a upper surface of the contents of the container.

With respect to claims 2 and 23 as depicted in fig. 1, Collins et al. discloses interrogating along a horizontal axis and an inclined axis.

With respect to claims 3 and 22, as depicted in fig. 1, Collins et al. discloses interrogating along two non-parallel inclined axes.

With respect to claims 4 and 24, as depicted in figs. 1, 2 and 2', Collins et al. discloses an inclined axes having a divergence of about 15 and 35 degrees.

With respect to claim 5, Collins et al. discloses geometrically small (e.g. 10-20 mm wide) active areas at the generation point and the detection points of the ultrasonic waves (col. 6, lines 61-63).

With respect to claims 6 and 11, Collins et al. discloses an ultrasonic generator generating simultaneously first and second ultrasonic waves and in which a signal processor uses the differences in times for the two waves to provide an indication of the level of contents (col. 14, lines 4-8). Collins et al. also discloses receiving a second

response (e.g. receiver 30) corresponding to an ultrasound reflected from the (e.g., wavefront 24) interface (22) between the surface of the contents in the container (10).

Collins et al. lacks the detail of an ultrasound reflected from the intersection between the upper surface and a sidewall of the container. However, the ultrasonic source (28) in which Collins et al. can easily be manipulated to transmit a signal that encounters an intersection of the container as well as the surface of the contents. Therefore, to employ Collins et al. on an ultrasound reflected from the intersection between the upper surface and a sidewall of the container would have been obvious to one of ordinary skill in the art at the time of the invention since this reference explicitly teaches its use on ultrasonic monitoring device for containers which includes reflecting ultrasound waves from a upper surface of the contents of the container.

With respect to claims 7, 27, and 28, Collins et al discloses an ultrasonic generator generating simultaneously first and second ultrasonic waves and in which a signal processor uses the differences in times for the two waves to provide an indication of the level of contents (col. 14, lines 4-8). As depicted in figs. 2 and 2', Collins et al. discloses a graphical presentation of how the ultrasonic waves may change with changes in the liquid level (col. 6, lines 18-36). The method Collins et al. use of generating simultaneously ultrasonic waves and graphing the way the ultrasonic waves change clearly infers and/or suggest the use of a weighted average of the time series as claimed.

With respect to claim 8, Collins et al. also discloses receiving a first response (e.g. receiver 30) corresponding to an ultrasound reflected from the opposite sidewall (e.g., wavefront 26). Collins et al. discloses receiving a second response (e.g. receiver 30)

corresponding to an ultrasound reflected from the (e.g., wavefront 24) interface (22) between the surface of the contents in the container (10). Finally, Collins et al. discloses using the difference in travel time for the two wave fronts (24,26) to provide a level of the contents in the container.

With respect to claim 9, as depicted in fig. 1, Collins et al. discloses ultrasound having different encoded information that is transmitted in different directions.

With respect to claims 10, 19, and 21, Collins et al. discloses an ultrasonic source (28). Collins et al. does not specifically disclose a plurality of ultrasonic transducers. However, the court held in, In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960), that the duplicating the components of a prior art device is a design consideration within the skill of the art. Therefore, to employ Collins et al. on a plurality of ultrasonic transducers would have been obvious to one of ordinary skill in the art at the time of the invention since this reference explicitly teaches its use on ultrasonic monitoring device for containers, which includes an ultrasonic source.

With respect to claim 12, Collins et al. discloses an ultrasonic system containing a frequency content to above 1Mhz. Collins et al. lacks the detail of interrogation occurring at a frequency of less than 20kHz. However, the court held in, In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980), that the optimum value of a result effective variable involves only routine skill in the art. Therefore, to employ Collins et al. on a plurality of ultrasonic transducers would have been obvious to one of ordinary skill in the art at the time of the invention since this reference explicitly teaches its use on ultrasonic

monitoring device for containers including an ultrasonic system containing a frequency content to above 1Mhz.

With respect to claim 17, as depicted in figs. 2 and 2', Collins et al. discloses a graphical presentation of ultrasonic waves that change with changes to the liquid level. This is equivalent to a displaying an indication as claimed.

With respect to claim 33, as depicted in fig. 1, Collins et al. discloses receiving (30) a wavefront (26) independently of the height of the container (10); and measuring the time-of flight (col. 6, lines 6-17).

4. Claims 13-16, 25, 26, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Collins et al. (6234,023) in view of Holden et al. (5,438,868)

With respect to claims 13-16, and 25as depicted in fig. 1, Collins et al. discloses a transducer (28,30) near the exterior of a container (10). Collins et al. lacks the detail of the transducer mechanically coupled to the exterior of the container. Holden et al. discloses connecting a transducer (e.g., signal transducer 74) to a container (e.g. reservoir 10). As depicted in fig. 1, the apparatus of Holden et al. can easily be attached to the container (e.g. reservoir 10) before or after filling the container (e.g., reservoir 10) with liquid, and also be removed to attached to another container (e.g., reservoir 10).

Therefore, to modify Collins et al. by employing on a transducer mechanically coupled to the exterior of the container would have been obvious to one of ordinary skill in the art at the time of the invention since Holden et al. teaches an ultrasonic liquid level indicator having theses design characteristics. The skilled artisan would be motivated to combine the teachings of Collins et al. and Holden et al. since Collins et al. states that his

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invention is applicable to an ultrasonic monitoring apparatus and Holden et al. is directed to an ultrasonic liquid level indicator.

With respect to claim 26, as depicted in fig. 1 Collins et al. discloses a cylindrical container (10).

With respect to claim 29, as depicted in fig. 1, Collins et al. discloses a transmitter (28) that transmits ultrasound in an horizontal and inclined axes, and a receiver (30).

Collins et al does not specifically disclose a transducer that transmits and receives ultrasound. Holden et al. discloses a transmitter/receiver (50) (col. 4, lines 17-33).

Therefore, to modify Collins et al. by employing on a transducer that transmits and receives ultrasound would have been obvious to one of ordinary skill in the art at the time of the invention since Holden et al. teaches an ultrasonic liquid level indicator having theses design characteristics. The skilled artisan would be motivated to combine the teachings of Collins et al. and Holden et al. since Collins et al. states that his invention is applicable to an ultrasonic monitoring apparatus and Holden et al. is directed to an ultrasonic liquid level indicator.

5. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Collins et al. (6234,023) in view of Arndt et al. (6,650,280).

With respect to claim 18, Collins et al. discloses a receiver (30) used to determine the level to which the container (10) is filled. Collins et al. does not specifically disclose transmitting the determined fill level to a remote location. Arndt et al. discloses a receiver (58) receives data and provides the information to a computer via cable, transmitter and/or by other means (col. 12, lines 33-38). Therefore, to modify Collins et



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al. by employing on a transferring the fill level to a remote location would have been obvious to one of ordinary skill in the art at the time of the invention since Arndt et al. teaches fluid measuring device having theses design characteristics. The skilled artisan would be motivated to combine the teachings of Collins et al. and Arndt et al. since Collins et al. states that his invention is applicable to an ultrasonic monitoring apparatus and Arndt et al. is directed to an device determining height measurements of fluids.

### ***Conclusion***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tamiko D. Bellamy whose telephone number is (571) 272-2190. The examiner can normally be reached on Mondays, Tuesdays & Fridays 6:30 AM to 3:30PM; and on Wednesdays and Thursdays the examiner 6:30 AM to 11:30 AM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tamiko Bellamy

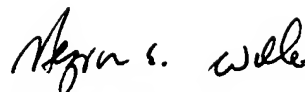
T.B.

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April 19, 2004

A handwritten signature in cursive script, appearing to read "Hezron S. Williams", followed by a long horizontal line extending to the right.

HEZRON WILLIAMS  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800